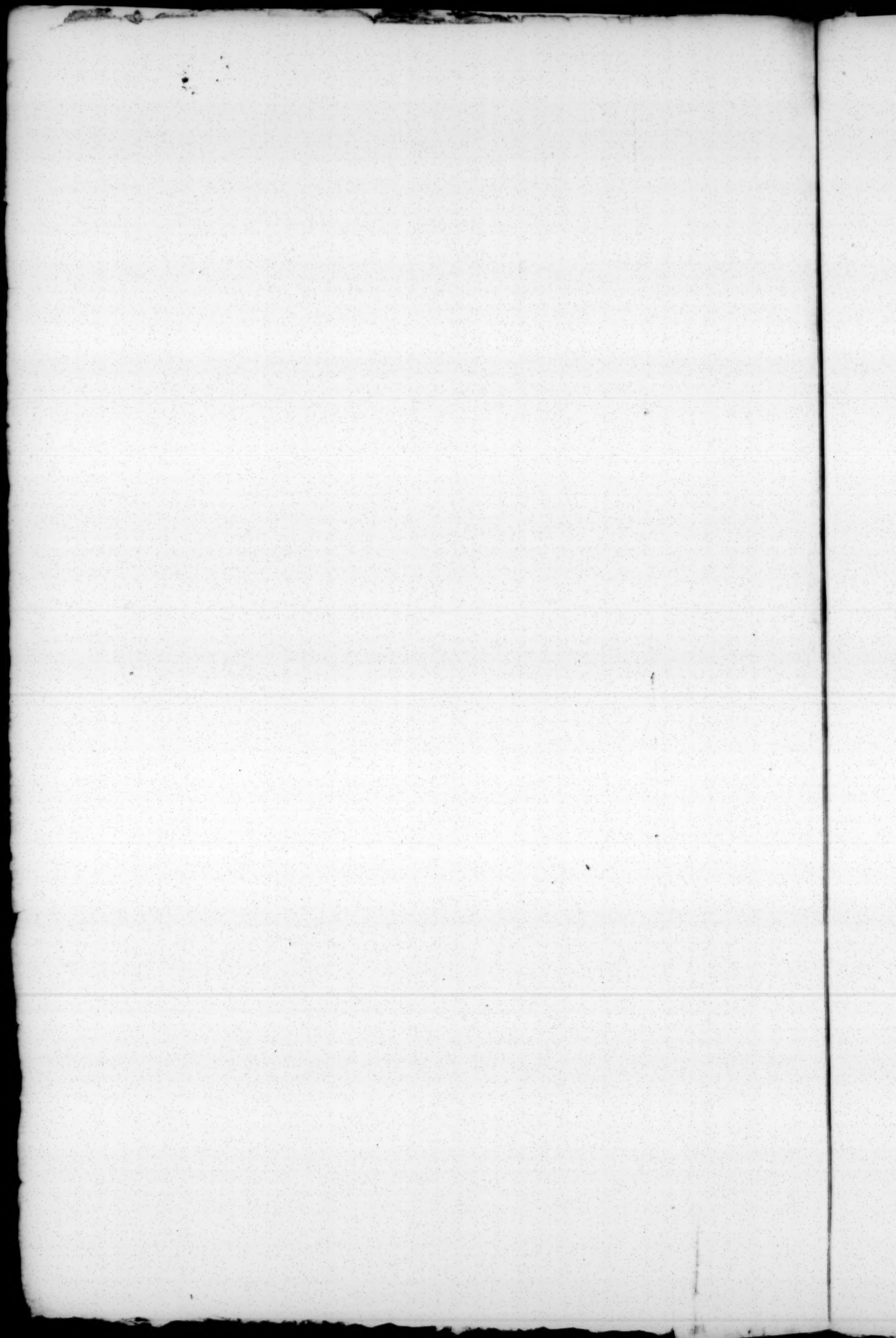


A
R E P L Y
T O
Dr. SAUNDERS'S PAMPHLET.

[Price One Shilling.]



B. T. 1. 312*

19

A
R E P L Y
T O
Dr. SAUNDERS'S PAMPHLET,
Relative to the DISPUTE concerning the
DEVONSHIRE CIDER.

By FRANCIS GEACH,
Surgeon at Plymouth, and F.R.S.



L O N D O N.

Printed for R. BALDWIN, No. 47, in Pater-noster-Row.

MDCCLXVIII.



P R E F A C E.

THE learned Author of the Enquiry into the Cause of the Devonshire Colic having owned in his last publication, page 256, that *he may have erred in his opinion*; and having at the same time declared, *that he shall be happy even in his error, if it shall excite some other enquirer to investigate a truth of so much importance to society*, no apology, I presume, need be made for the present publication: But I can assure the learned Author, that neither, *prejudice, passion, nor interest*, influenced me to dissent from him on this subject. A desire to promote *the health and prosperity of our countrymen*, was the motive that equally induced us both to take up our pens on this occasion; and here it may not be amiss just to mention the reasons, which at first made me suspect some error in this new hypothesis.

B

First,

First, because it appeared to me very improbable, that any quantity of lead should be eroded by the cider, as it immediately runs off from the pounds, for in that state, it is not so properly cider as the *must* of cider, which is *very sweet*; and every pupil in chemistry knows, that the acid of cider is the only part capable of dissolving lead. *Saunders (page 19.)*

Secondly, allowing that lead may be so dissolved, the quantity does not seem sufficient to produce such terrible effects as are attributed to it; for, according to the Doctor's proportion (one grain to a gallon) an ounce being divided into one thousand, nine hundred, and twenty parts, one of these parts, almost too small for sight, would be the share allotted to a quart, not to mention that this inconsiderable quantity would, according to Doctor Saunders, (*page 24.*) become less and less poisonous every day.

On the other hand, small as this quantity is considered in this light, it is (oddly enough unfortunate for the system) much too great considered in another; for whether the quantity of lead, at first fixed in those machines, be according to my account, two or three pounds, or according to Mr. Alcock's, four or five, or according to Doctor Saunders's, ten or twenty pounds;
(page

(page 22.) it is plain, that a pound which makes two hundred hogsheds a year, (and many such there are) would lose the three pounds in little less than two years, the five pounds in little more than three, and Doctor Saunders's twenty pounds would be all gone in little more than twelve; whereas the lead in those machines is, perhaps, never replaced, at least not once in eighty or an hundred years.

Lastly, if the lead in the pounds was the cause of the disorder in question, it would always prevail wherever lead was so made use of; and, on the other hand again, wherever lead was *not* so made use of, the disorder would never prevail; both which are contrary to all experience.

As by Mr. Cookworthy's experiments, and the unquestionable testimonies of gentlemen, both of fortune and credit, these cider-making engines are now exculpated from the charge of imparting lead to the cider, while it is making, and of bringing on the endemial colic, or, indeed, any disorder, they need not without further reason be demolished, nor the mode of making this useful liquor altered.

Though the lead in the pounds is assigned by the learned Author, in his *Enquiry*, as the *only cause* capable of producing the colic of Devonshire, yet in his last

work, published by the College, he seems to fluctuate between two opinions: for after saying, " that it is the peculiar operation of lead to excite a disease most remarkably characterized," (*that is, by a lameness in the hands,*) he adds, " I do not venture to affirm, that there does not exist *another* cause productive of similar effects." (*Medical Transactions, page 405.*) But, from what I have written, it may perhaps appear, that such a *supposition* is not *void of probability*, since no other cause (but lead) has been shewn adequate to the phenomena. " It is proved by the experience of printers," (says the Doctor, page 310.) " that the using types which have always some lead in them, which have been suffered to stand before the fire, in order to dry them, has been followed by weakness and contraction of the fingers; nay, from several cases which have been related to me on good authority, I have had reason to suspect, that the vapour of this metal, even when heated by friction only, *has occasioned the colic of Poitou*, with all its consequences. That currant tarts also, baked in glazed earthen vessels, may lay the foundation of a painful, lingering disease, more formidable than death." *Page 279.*

It

It is sufficiently obvious then from this last publication, that the Doctor is drawing off from his first position, viz. that *lead* in the pounds is the sole cause of the Devonshire colic: and, by calling in collateral aids, endeavours to shew, that we may get the colic of Poitou, by what we every day eat and drink, nay even touch; lead being almost every where, and in every thing. But, if these causes, and several others specified by the Doctor, such as lead in vinegar, in poultices, &c. can bring on this colic, and a paralytic lameness of the hands; why should not the colic of Devon be sometimes referred to one, or more of these causes, and not made to rest *solely* on the lead in the pounds? And, why should not the disorder prevail always, and every where?

Though the learned Author, in his first publication, does not allow that the immoderate use of foul undepurated cider, drank in a state of fermentation, can possibly produce the colic; and, in the second, page 250, observes, that Doctor Ingen Housz is informed, that in Normandy there is no endemial colic, which *can be attributed to cider*; yet, the French quotation, from Monsieur Chaudelier, produced by the Doctor, seems to carry a different meaning.

“ Dans

“ Dans Rouën, il n’y a gueres ou point
 “ d’annees, où il ne y ait des coliques, qui
 “ attaquent ordinairement les domestiques
 “ par preference, et en plus ou moins grand
 “ nombre dans les memes maisons: ce qui
 “ fait presumer qu’elles sont *occasionnees par le*
 “ *cidre* qui est la boisson ordinaire des domes-
 “ tiques.” *Medical Transactions*, page 461.

In Rouen there is scarce, if at all, a year, in which there are not colics, which ordinarily attack the servants more than any other persons, and in greater or less number in the same dwelling: from whence one may presume that they are *occasioned by the cider*, which is the common beverage of the domesticks. It appears by the French paragraph, at length, to which I refer the reader, that the colic of Normandy, is brought on *only* by the cider; the chemist, by all his art, not being able to discover the least atom of lead in it: and as it is acknowledged, that the immoderate use of this provincial liquor brings on the colic, the analogy between the colic of Normandy and the colic of Devon may be fairly inferred. And it is surprising so learned a physician should insist, that there can be no resemblance between the disorder of these provinces; because the colic of Normandy scarce, if at all, ends in a palsy. But are not the pounds
 in

in Normandy as well as the pounds in Devon *garnies du plomb*? Medical Transactions, page 463. And will not a similar cause produce a similar effect? Doctor Musgrave mentions the colic of Devon, without either palsey, or epilepsy: was no lead used in the cider machines, in Doctor Musgrave's time? Engine pounds were not then in use. I can assure the learned Author, and can bring testimonies from physicians of extensive practice in these parts to prove, that the Devonshire colic does not always, and necessarily, occasion the palsey; this symptom happening for the most part, only, after a metastasis of the malady, a long continuance, or repeated attacks of it; and generally confined to the labouring people, who will drink so much new cider, as to exceed all belief. Every practitioner in Devon knows, that these are not false facts, and misrepresentations, but real truth. Further, if pendulous hands were always the consequence of this endemial disorder, half the county, in a few years, would be paralytic; the servants and labourers, who are every year more or less afflicted with this colic, would be utterly unfit for service. Instead of two hundred and eighty-five, the whole number in about five years received *from all parts of Devon* into the

5 county

county hospital, that number or more would be sent every year; and if lead were taken in so many different ways, and the disorder thereby propagated, the number would be still multiplied.

But, as all reasoning in an enquiry of this kind may be deemed insufficient, without experiments, I thought it right to suspend this publication, till experiments could be made: and Mr. Cookworthy, a distinguished chymist of Plymouth, has now obligingly furnished me with them; and in so doing, may be of great service to the whole county of Devon.



CHEMICAL EXPERIMENTS

ON THE

DEVONSHIRE CIDER,

By Mr. WILLIAM COOKWORTHY

of PLYMOUTH.

FIVE gallons of Devonshire cider, (made in a pound which had lead in its construction) sent by Francis Geach, were distilled, in a glass retort, to about three quarts, the remains were evaporated in a porcelain vessel, by a gentle heat, to the consistence of a very thick syrup; then the vessel was removed into a sand-pot, and the evaporation continued, until, by raising the fire, the extract was burnt to a coal, which weighed upward of eleven
C ounces.

ounces. As this appeared to be too large a quantity of matter, and by far too replete with the inflammable principle for an assay, it was thought proper to reduce it, which was done by calcining it in a crucible red hot, a little inclining to whiteness; this reduced the remains to three ounces and a half, but they were still a coal, quite black, and lighter than charcoal; so that there would not have been the least danger of the lead's being vitrified by the calcination, for reasons too obvious to be mentioned to any one who knows the least thing of the nature of the reduction of metals.

This coal was powdered, and mixed with double its weight of a flux, consisting of two parts tartar, and one nitre, and put into a crucible placed in a strong wind furnace. The matter soon melted, but could not by a very strong fire be brought to melt thin, and settle to the bottom of the crucible; a circumstance absolutely necessary to the separation of so *small* a quantity as *five grains* of metal, from so *large* a portion of matter, with which it was so minutely and intimately blended. The crucible was kept in the fire for twenty minutes, the contents continuing to swell up, and plentifully emitting flame, plainly proved, that the phlogiston was
not

not burnt off, and consequently the lead in no danger of being vitrified.

The crucible was now removed from the furnace, and boiling water repeatedly poured on the contents, till the alkalious salts were dissolved, and the coal-like remainder rendered insipid; it was then dried, powdered, and sifted, when *no lead was discovered*. It was afterwards calcined on a hollow tile under a muffler, for at least an hour: during this operation it yielded a blue flame; when this ceased, it was reduced to whitish ashes, which weighed but five drachms. These ashes were then mixed with double their weight of the above flux, and melted down as quickly as possible: a strong fire was necessary, as the earth proved very refractory. On breaking the crucible, *not the least grain of lead* was found in the bottom of it. The slag, with part of the crucible, adhering to it, were powdered by downright strokes of the pestle, and passed through a coarse small lawn sieve, without leaving *the least particle of lead in it*.

The Doctor's description of his process is very vague: he says nothing of the quantity of extract his cider yielded. To mix the flux with it in the state it is described in More's letter, was manifestly

wrong: it could not have weighed less than eleven or twelve ounces at least; it is not therefore strange that the quantity of flux is not mentioned. This and the extract must have required a large crucible. Nothing is said of the appearances arising in the course of the process. It is very plain, from those above mentioned, that they must have been very unpromising, for the separation of *four grains and a half* of lead from so *large a quantity* of materials with which it was so minutely blended, and which was incapable of that thin and quiet fusion, so necessary to the perfect separation of metals, it was therefore quite prudent to take no notice of them.

On trying three samples of Devonshire cider from lead pounds with the solution of hepar sulphuris, the precipitate was very white in all the experiments, and consequently no appearance of lead. The first drop of the solution produced a whiteness in them all. One of these samples was from the noted Alphington pound, and one from the Sharpham.

I think this trial with the hepar sulphuris sufficient to determine the dispute; for if there was any lead in the cider, this would infallibly discover it.

One thing is a little remarkable: when the assayer observes, that if the hepar sulphuris

phuris be properly dropped into cider, the whole of the lead contained in it, will be precipitated with the sulphur in a brown or blackish sediment. If this be true, it seems to me that he might have made his assay on cider, and determined the exact quantity of its contents of lead by a much easier, and more certain process than that of Experiment V. where *the shot were picked out of the extract*. For by pouring the cider from this precipitate, and then burning the sulphur from it, the remains must be a kind of lead ore, which by the common method of assaying might be easily reduced into malleable lead. The Doctor's preferring therefore the other method, when he was in possession of a better, shews, that a man may have Scanderberg's sword without his arm.

To make this matter as clear as possible, I here beg leave to insert certificates, to prove, that the cider on which Mr. Cookworthy made his experiments was made in lead pounds.

“ S I R,

“ INCLOSED is the certificate from
 “ the maker of cider, which my father
 “ would have sent before, if he could have
 “ procured

“ procured it. He desires his compliments,
“ and I am, Sir,

“ Your humble servant,

“ JOHN-BRAZIER ORPWOOD.”

“ THIS is to certify, that I Thomas
“ Heard, of Alphington, have delivered
“ to Edward Orpwood, Esq; of the said
“ parish, about six gallons of cider made
“ on a cider-press in the parish of Al-
“ phington, whose dish * is covered with
“ lead. As witness my hand, this second
“ day of April, 1768,

Witness “ THOMAS HEARD.”
Simon Bodley.

To Mr. COOKWORTHY.

Totness, April 14, 1768.

“ S I R,
“ SOME time since Mr. Geach de-
“ fired me to procure him six gallons of
“ cider from Alphington, which had
“ passed over a leaden vat. I could not
“ obtain it when I first applied, but re-
“ ceived it yesterday, and have now sent
“ it to you; and have inclosed the ex-

* Note, by dish is meant vat.

“ pence

“ pence and certificate, which please to
 “ deliver to Mr. Geach when you see him.
 “ I do not know whether the cider now
 “ sent be sweet, but our farmers here
 “ who use the London market assure me,
 “ they never use any litharge, nor any kind
 “ of preparation that has the least lead in
 “ it.

“ I am, Sir,

“ Your humble servant,

“ PHILIP COCKEY.”

To Philip Cockey, Esq.

“ S I R,

“ THESE are to certify, that the two
 “ bottles of cider I have sent you, were
 “ made and passed over the leaden vat at
 “ Sharpham, in the parish of Ash-
 “ prington.

“ I am, Sir,

“ Your humble servant,

*Sharpham,
 Feb. 3, 1768.*

THOMAS EDMONDS.”

And here I beg leave to subjoin the fol-
 lowing letter from Philip Cockey, Esq; of
 Totness, which may serve to throw some
 light on this subject.

“ S I R,

“ S I R,

“ I have read your observations on
 “ Doctor Baker’s Essay on the Endemial
 “ Colic of Devonshire, and I am told that
 “ Doctor Saunders has writ an answer to
 “ it. If you should ever think to take up
 “ the pen again on the subject, I would
 “ beg leave to remark to you, that there
 “ are more presses in Devonshire covered
 “ with lead, than that mentioned (*page*
 “ 15.) at Alphington.

“ I purchased an estate called *Sharpham*,
 “ near this town, in the year 1748, and upon
 “ my examining the pound, &c. I found
 “ the press defective, and I ordered it to
 “ be covered with sheet lead, and it now
 “ remains there: I cannot give you an
 “ exact account of the cider made since
 “ the lead has been put upon the press,
 “ I suppose between fifteen hundred and
 “ two thousand hogheads; but I can
 “ venture to assure you, that I never knew
 “ any one person afflicted with the colic,
 “ by the use of the cider made there.

“ I believe Mr. Rennell, of Newton
 “ Bushel, has also a press, which was
 “ covered with sheet lead about thirty
 “ years since; but I could never learn that
 “ any ill effects were produced from the
 “ cider

“ cider he made. Mr. Pearce, near King’s
 “ Bridge, has a common pound, the press
 “ of which was many years covered with
 “ lead, and his neighbour, Mr. Brown,
 “ pounded his apples there, and the two
 “ might make, annually, near two hun-
 “ dred hogheads; and several other
 “ persons used the pound also. But Mr.
 “ Pearce could never remember, that any
 “ of his family, or neighbours, have been
 “ afflicted with the colic (one instance
 “ only excepted) which was when he used
 “ a wooden press only.

“ I shall trouble you only with one
 “ observation more. Raleigh Mallock,
 “ Esq; of Cockington, has an engine
 “ pound, and no lead in any part of its
 “ construction, and yet the inhabitants of
 “ the village, and his family in particular,
 “ have almost every year been afflicted
 “ with the colic, but most certainly not
 “ occasioned by the bad consequences of
 “ lead; and I make no doubt, but many
 “ instances of the like nature might be
 “ found out.

“ I am afraid, if Doctor B.’s pamphlet
 “ should be credited by the purchasers of
 “ the Devonshire cider, it would be of
 “ the greatest prejudice to the county;
 “ and as I really think, that what he has
 “ advanced is not founded on facts, I

D

“ should

[18]

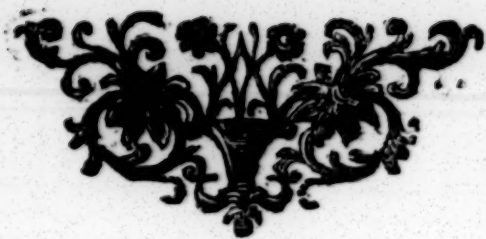
“ should be glad if I could contribute
“ towards making it appear in its true
“ character.

“ I am, Sir,

“ Your most humble servant,

Totness,
Dec. 18, 1768.

“ PHILIP COCKEY.”



DOCTOR

DOCTOR Saunders having undertaken a defence of a late pamphlet, concerning the cause of the Devonshire colic, in answer to some objections which I ventured to make against it, I shall, in the following pages, examine and reply to the arguments (if such they may be called) advanced by the Doctor in his said defence.

Dum falsos aliorum errores exagitat, ipse suos veros prodit.

“ I have taken the earliest opportunity
“ of perusing a pamphlet, written pro-
“ fessedly in opposition to the opinion
“ which is maintained in your Essay.”

Page 1.

A. Not professedly in opposition to the opinion, if by opposition you mean the spirit of cavilling; but, *soberly* in defence

D 2

of

of a point in which the whole county of Devon is concerned; and also (excuse for once the vanity) to set the learned Author right in his mistake, that lead, which can be found only in some pounds, is the sole cause of the Devonshire colic; into which mistake, it now pretty plainly appears, he has been led, or at least confirmed in it, by Doctor Saunders and his experiments.

“ Already well known to the medical world, on account of his new and curious observations on diseases on the eye.” Page 1.

A. And well known also, on the same account, to a *certain eminent physician*, who helps to constitute a part of the medical world, who was pleased, but a little while since, to give a very honourable testimony in favour of those said observations.

“ The former (Geach) appears to me in the character of one, who is desirous of neglecting no opportunity of paying every mark of his respect and adulation to a *great name*.” Page 1.

A. Honour has been paid to Doctor Huxham by all Europe, not merely on account of his great name, but, if you please, his consummate medical skill; the parent of his great name. Respect there-

fore is due from me to Doctor Huxham, as a great physician: and I acknowledged with gratitude, not with adulation, the friendship he had honoured me with. Was it Doctor Huxham's *great name*, or great merit, that influenced the most learned to admit him of their society, and of their college? Doctor Saunders, perhaps, cannot impeach the compliments paid this physician, without reflecting, at the same time, on his *own masters*.

“ For his portion of this curious compound, contains little, *very little*, more than a dull uninteresting, uninteresting, repetition of a vain unsubstantial theory, together with *much* false reasoning from his own private stock, and an abundance of misrepresentation.” *Page 2.*

A. And by what epithet shall I distinguish this compound; every word of which carries conviction and decency along with it? For not to mention the *sales Attici*, with which it is so plentifully seasoned, the whole abounds with such fine reasoning, and strong argument, that all possible reply is entirely cut off. But whether the theory of this experienced and celebrated physician, which you are hardy enough to pronounce *vain and unsubstantial*, deserves this censure, must be left to the decision of the learned. The reasoning (whether
false

false or true) comes from the stock of others, and so does the misrepresentation, if there be any. In proof of this I shall cite but a few passages, out of the many that might be brought from the works of approved *modern* writers, whose authority the letter writer cannot, I presume, with becoming grace, controvert. The *ancients* (to shew my readiness to oblige) shall be left quite out of the case. My angry reprover must allow, that the reputations of those writers are founded on something else than a *great name*, and though at present no ancients, they will one day be so, and when so, will probably be *no blind guides in what relates to the animal æconomy*. (Page 12.)

“ This man’s arguments are of too
 “ delicate and ethereal a structure, to bear
 “ the least touch, and he who makes an
 “ attack on them, is in the case of a man
 “ who draws his sword against a shadow.” (Page 3.)

A. And your attacks, Doctor Saunders, are altogether harmless, and nothing but a defence can make them considerable: they have been made only against the *shadowy* part of the argument; the substantial part remains still untouched. You only ventured to brandish your *sword* against it,

it, and very soon, and very prudently, returned it again into the scabbard.

“ The substance of this argument is, “ that spasms, and colics, are caused by “ acids; because acids cause them.”

A. That you should deny acids to be productive of the colic, is not at all to be wondered at; since you also deny, that an acid acrimony can bring on the rickets, or, indeed, any disorder. But let that be as it may, your great point, I imagine, is to make it appear that the endemial colic of Devon is owing to the *lead* made use of in the pounds, in which the apples are pressed; and mine just the contrary, that lead is not the cause; which of us has truth on his side, is neither for you nor me to determine.

“ No fruits in their unfermented state “ contain tartar of any kind.” Page 4.

A. That fruits do not contain tartar in substance, may be readily granted. But, properly speaking, the tartar of fruits is the essential salt; *et quanto acerbior fructus, tanto crassior et copiosior sal essentialis, ut in vino mosiellanico et pomaceo nostro manifestum est. Siquis vero dubitat, Doctor Huxham foresaw that, in these latter times of apostacy, some one who sitteth in the chair of the scorers, would shoot forth bitter words against his theory. Forte an musto pomaceo*
tanta

tanta vis insit tartari, experiatur ipse modo ob angela sala optime descripto, mucilaginem nempe a succo abtrahendo, quanto copia *salis essentialis* ab eo collegi possit.

“ Here follows a curious observation. Air-bubbles are apt to get into all pipes and tubes that carry any fluids.” *Page 4.*

A. This curious observation lawfully belongs to Doctor Arbuthnot—no ancient. *Vid.* his Essay on Air, *page 38.*

“ Another observation as curious as the former. It is probable that those severe pains felt in the extremities of the body are, for the most part, flatulent, since by rubbing the affected parts, the wind is often removed or expelled. From which of the extremities has this gentleman practised the art of expelling wind by rubbing? No air can enter the human body, or exist there in a state of elasticity.” *Page 5.*

A. By what has been said of the elasticity of the air, and which the smallest mass of it passes, so as to be able to resist the pressure of the incumbent atmosphere, one may perceive, says Doctor Arbuthnot, the great force of *hot elastic air, in the cavities of human bodies.* Whether air-bubbles may be generated in the vessels of human bodies, I shall not positively determine. Strong probabilities for the affirmative

mative are, that *air-bubbles are apt to get into pipes which carry any fluid*, even into those which carry water; and their effects are well known. It is likewise certain, and what I have known by frequent experience, *that there are pains in the extremities of the body which seem flatulent*; and I have often perceived, by *friction of these parts*, immense quantities of wind to come out of the stomach by belching. *Vid.* his Essay on Air, page 38. There is, (Haller's Physiology, book i, page 141, translation) without doubt, a circulation of fixed air absorbed by the inhaling vessels of the lungs, alimentary tube, and skin; and the lungs probably exhale again such particles as regain their elasticity in the blood. For that there are often such *elastic parts of air in the blood*, especially after drinking *flatulent wines, and cider*, I am certain, &c. &c. Now, Doctor, which are most *curious*, these observations, or your remarks?

“ But in case the existence of internal
 “ air-bubbles should be controverted, Mr.
 “ Geach has afterwards recourse to the
 “ external air, and he contends that the
 “ disease *must* be partly owing to some
 “ peculiar disposition of the atmosphere.
 “ What is this but an explanation of
 “ an *ignotum per ignotius?*” Page 5.

E

A. I

A. I do not attempt to explain the manner how the atmosphere does produce disorders; I only mention the fact. But perhaps Doctor Saunders has never read, or having read, peradventure may affect to despise, what Hoffman, Hilary, and others, have written on this subject. Why was the observation of Paulus Æginata dropped on this occasion? The reason is plain; the citation would have stared my bashful opponent too fully in the face, and Paulus, though one of the ancient writers, might have weight with the learned part of his readers.

“ That the air obtains a secret disposition, or temperature, productive of disorders at different times, is apparent to such as consider, that the very same disease in one season proves epidemical, and destroys great numbers, and in another, seizes but few persons.” *Sydenham.*

Baglivi mentions an epidemical colic at Rome from acid wines.

“ But it is too common a fault of authors, thus to build hypothetical castles in the air.” *Page 5.*

A. To avoid this common fault, you, Doctor, more wisely chuse to build on lead.

“ If this disease depends on the bile’s being exalted by heat, ought it not to
“ be

be more severe in warm autumns. But
 “ he himself says, that warm autumns are
 “ less productive of this disease than cold
 “ and inclement seasons; that the bile
 “ exalted by heat, produces porraceous
 “ vomitings, so corrosive as to excoriate the
 “ mouth; that in consequence of this
 “ fluid, wind and spasms are engendered,
 “ which bring on an obstinate costiveness;
 “ and yet, in the next page, he tells us
 “ that warm autumns, which, according to
 “ his own system, ought to be most effectual
 “ in exalting the bile, produce diarrhœas,
 “ and choleras; whereas, in colder seasons,
 “ obstinate constipations prevail.” *Page 6.*

A. Warm and moist autumns, which ripen the fruits, are less productive of this disorder, because such ripe fruits are apt to bring on diarrhœas and choleras, which (to use your own significant words) generally prove critical in the colica pictonum. *Page 9.* But in cold and inclement seasons, when the fruits are austere, and the perspiration lessened, the contrary of this happens. The bile, in hot seasons, will occasion severe vomitings, especially when large quantities of undepurated cider are drank. And this doctrine is altogether *consistent* with the experience of accurate physicians, though it cannot be at all proved by chymical experiments.

“ If the porraceous bile be so acrid as
 “ Mr. Geach represents it, how comes it
 “ to pass that an obstinate costiveness is
 “ the consequence? Would not a contrary
 “ disposition of the bowels be naturally
 “ expected from so acrimonious a fluid?”

A. All people, long conversant in practice in this part of England, know, that acrid porraceous bile will be thrown up in the Devonshire colic, and in this state of the disorder, no intestinal discharge can be easily procured. I have known a week elapse without stools; the patient in the mean time being often convulsed with pain, and the belly ready to burst with distention.

“ Mr. Geach will have a difficult task
 “ to explain, how the same cause can
 “ render the bile more inert, and more
 “ corrosive.” *Page 7.*

A. Here, Doctor, you checked yourself in mid-volly; was it to stand and contemplate me in my embarrassment to solve this riddle?—More probably from being struck with the solution which immediately followed. *Ferax hæc causa malorum quam bilis ab acido coacta in cysti fellea, acinis et ductis hepaticis iners velut ac torpida per spatium aliquod hæreat, latet tamen anguis in herba. Si quis enim corporis humor, vel blandissimus, extra*
 aream

aream circulationis effusus, calore corporis humani exponatur diu, et motu partium vicinarum agitetur, tenuior indies et acrior factus, in acerrimam, et vasa omnia comedentem saniem mutabitur tandem. Nonne pulchram sæpe mamma, ex stagnante solo dulcissimo lacte, depascitur ulcus horrendum? Si huic humori suavissimo, annon eadem imo vel graviora longe eventura sunt bili etiam in statu naturali omnium acerrimo huxtra.

The juice of most fruits *newly pressed* contain an *essential salt*; by so much the thicker and more copious, by how much the sourer the fruits are. These remember, Doctor, are very hurtful in the gout and rheumatism.

The bile itself becomes *corrupted*, hardens, and *stagnating* in the liver, is a further cause of *irritation*. Tronchin, Schomberg's translation, page 127. The bile you see by stagnating becomes thicker, and yet, according to these learned Doctors, after a time, may come to be both active and irritating. Do not *practical* physicians every day observe, that the stagnant humours in œdematous legs, become at last active and highly acrimonious?

“ We read that the urine, and serum
 “ of the blood, is green, and the sweat
 “ sour. The existence of acid in the blood,
 “ is

" is by no means proved by any one."

Page 8.

A. You should have quoted the other part of the sentence, that eruptions will be thrown out on the skin.

Van Swieten speaks of acid sweats and miliary eruptions. *Saunders.*

As no acid is naturally in an animal body, but must be taken by the mouth, so, if it is not subdued in the first passages of chyle, *it may get into the blood:* and if there be not a sufficient quantity of blood, and strength of circulation to subdue it, it may infect the whole mass of the fluids. It is found by experience (which experience, by the bye, is of singular use in the practice of physick) that the *sweat is sometimes acid*, which is a sign of recovery after fevers, when the blood was in a contrary alkalescent state. *Arbutnot on Aliment, page 170.* And for the truth of this, ask any *old experienced* physician.

" Is every colic incident to ladies, the
" colic of Poitou? Are there no pathog-
" nomonic symptoms, which distinguish
" this from every other colic?" Page 9.

A. What are they? If loss of strength, and paralytic lameness of the hands, are the pathognomonic symptoms; all severe colics, from whatever cause, will often,
though

though not always, occasion such a lameness.

“ If lead by any means comes into contact with cider, more of that poisonous metal will be dissolved in cold and inclement, than mild and warm autumns, for the acidity will be greater. And hence it is easily seen, why the colics, which happen in mild and warm autumns, are hardly to be distinguished from ordinary diarrhœas.” *Page 10.*

A. One grain of lead to a gallon of cider, is the proportion said to be dissolved by the acid of cider; * now in cold and inclement seasons, perhaps, *two* or *three* grains may be dissolved. Here observe, that an obstinate costiveness is one of the pathognomonic symptoms of the colica pictorum, and in warm autumns we have this colic with no costiveness at all but a diarrhœa; how comes it then to pass, that one grain of lead in warm autumns shall purge the belly, and three in cold bind it? Why, Doctor Saunders himself has very obligingly informed us.—*Poisons taken in too*

* In the Doctor's first pamphlet, this was the quantity—in the last work published by the college we find, by the sixth experiment, that *three* gallons of cider gave a little more than *one* grain of lead; in another place, we read *that* the exact quantity of lead, which may in general be dissolved in the Devonshire cider; that I by no means undertake to determine.

too large a dose, by overacting their parts, elude even their own powers. Page 20.

“ He speaks very learnedly of the
“ sulphur in fruits, quite a new principle,
“ and not to be understood by any one;
“ not even by himself.” *Page 10.*

A. All this learned speaking consists, gentle reader, of one word only. When I used the term *sulphur*, as applicable to ripe fruits, I never imagined that any body, much less a chymist, would suppose I meant *brimstone* by it; but used that word in the acceptation, in which it is commonly taken by chymists; the inflammable principle, and that fruits do abound in this, is clearly apparent, from the fermenting juices affording so large a quantity of inflammable spirit; and also by the evaporated residuum containing so much of it as appears by Mr. Cookworthy's experiment; for the blackness of the extract was the oily, or sulphureous part.

A small particle of æther, air and water, combined, will, from their fluidity, form a spherule; consequently insipid, and inodorous. But coming into strict union round a more dense angular particle of earth, will form a conoid corpuscle, of which the spherule will be the basis, and the least point of the earth its apex. Such a par-

ticle irritating the smell and taste by its figure and density, volatile from its minuteness, and strongly attracting both air, water, and earth, we call *an acid fluid salt*; and such parts again variously combined with light earth, and other elements, will form a bituminous, greasy, *sulphurous*, or oily substance, as Sir Isaac Newton has observed. (And every chymist ought to know, that sulphur is the general term for all oleaginous substances.) An *acid* is thus by the reed neutralized into *sugar*, and in the vine and grape, changed first into a sour, and then into a saccharine juice. *Haller's Physiology*, vol. i. page 5.

Humor ex pomis, velut uvis recens expressus, sale essentielle *acido et valde crasso tartaro* abundat, plurimis porro et terrestribus particulis, multo sed impuro *sulphure*, at pomaceo novello plurimum inesse mucilaginis, argumento est lentor iste quam contrahit olei instar si vel nec debite fermentatur, non saturatur satis sale actuoso *mucilaginem sulphuream* attenuante. *Huxham de Morbo Colico*. I persuade myself, that Doctor Saunders must blush, (even in his own privacy) when he reads these citations.

“ Some allowance may be made for an
“ author of 1617, who might think it a

F

“ *crimen*

“ *crimen læsæ majestatis*, to dare to dissent
“ from the ancients.” Page 11.

A. And may not some allowance be
made for an author of 1767, in the present
improved state of natural and chymical know-
ledge, if he should *humbly* dissent from one
of the moderns, unless it may be as cri-
minal to call his doctrine in question, as it
was to suspect the chastity of Cæsar’s wife?
You know, Doctor, *that in medical matters*
we must pay adulation to no ipse dixit; nor do
we allow that the authority of any man
whatever can stamp infallibility on opinions,
which are not established (truly established)
by experiments. Page 28.

“ What Mr Geach says of the West-
“ Indians, is directly contrary to truth
“ (very modest indeed for a physician and
“ a teacher): the West-Indians, instead of
“ the punch which they formerly drank,
“ drink it now very weak and extremely
“ acid.—This I have received from the best
“ authority.” Page 12.

A. We have received from the best
authority, that the West-Indians now
drink their punch with a moderate quan-
tity of acid, and that Doctor Saunders
has been informed of the *thing that is not*.
But granting, for a moment, that your
authority is good, how will it prove that
lead is the cause of the Devonshire colic?---

Why,

Why, *compendiously thus*---Acids are not the cause of the West-Indian colic; *ergo*, lead must be the only cause of the Devonshire colic.---A very satisfactory sort of reasoning.

“ But if we grant it to be an undoubted
 “ fact, that Herefordshire cider brings on
 “ lunacy, will it follow that lunacy, and
 “ the colic of Devon, are the least ana-
 “ lous?” *Page 13.*

A. Yes. Lunacy and palsey, the effect of the Devonshire colic, are analogous. Is not the palsey almost always attended, more or less, with a depravation of the understanding, the common sensorium, the source of the nerves, being affected in both cases? The palsey may be occasioned by excess in astringent aliment; especially *unripe fruits*. A palsey is more or less dangerous, according to the cause, extent, and seat of the disease. *Arbutnot on Aliment, page 369. 2d Edition.*

Bilis igitur seu viridis, seu atra, in vesicula fellea, et in ductibus hepaticis *congesta diu*, et corporis calore fota, tandemque *liquefcens*, vel ab extremis venæ cavæ ramulculis absorpta in massam sanguineam rapitur, vel per ductum cholidicum in intestina effunditur. At cum utraque jam facta sit *summi acris*, sanguine confusa mira excitat mala: nempe genus nervosum irri-

tando doloris anxietatis *spasmos* infert vascula pariter rodit teneriora et in *cerebrum* translata illi est perquam infensa. *Huxham de Morbo Colico.*

“ This reasoning is not confirmed by
“ observing that children become convulsed, from acids abounding in the
“ stomach.” *Page 14.*

A. It is possible that tumors in the breast may be the effect of *acidity in the milk*, and convulsions in infants may be occasioned by *acidity passing into the blood*, and affecting the tender fibres of the brain.
Arbuthnot on Aliment, page 172.

“ I will therefore boldly say, that the
“ rickets are undoubtedly *not* produced by
“ acid.” *Page 14.*

A. My Lord Bacon observed, that boldness was the first requisite of a lawyer; why not of a physician, why not (with reverence be it spoken) of a chymist?

A learned physician has favoured me with the following account of the rickets, which may serve as an answer to Doctor Saunders's cavils.

But contrary to the rash assertion of this dogmatist, I believe it may be made to appear by as good arguments, and as convincing proofs, as the nature of medical subjects will generally admit of, for they certainly will not admit of demonstrative
proof,

proof, that an acid acrimony is really one principal cause of the rickets.

This disease then seems to consist in a watery, dissolute, broken state of the fluids, an acid acrimony, and a general relaxation and debility of the solids, in conjunction. These seem to be the proximate causes, and what constitute the nature of this malady. This, I presume, may be justly concluded from the following short sketch of the antecedent causes, nature, and cure of it.

The chief antecedent causes of the rickets are, first, an original lax, weak, or sickly habit, which the rickety child derived from the bad constitution of his parents, and brought into the world with him; *a labes hereditaria*.

Second, The age of infancy, to which this distemper is peculiar. In this tender age, the constitution and digestive organs being very weak, and the food acrescent, relaxing ferosities and acidities are more apt to be generated, than in any other subsequent stage of life.

Third, The cool air of a northern climate, especially in conjunction with moisture from a low, marshy, or fenny situation. The hot and dry air of a southern climate, not only dissipates by a copious perspiration the more watery diluent parts
of

of the blood, which are the vehicle of acrimony, but also alkalizes, and gives a putrescent disposition to the whole mass. A cold moist air, on the contrary, favours the production and accumulation of acid ferous humours, which by macerating the solids, and affording ill nourishment, enervate the constitution.

Fourth, Bad nursing. The effects of bad nursing; of suffering the child to lie too much in bed, and want of due motion and exercise; of suffering it to lie in cold, wet, or damp clothes; of letting it suck a nurse of a sickly habit, or bad regimen: I say, the effects of bad nursing, in these and other instances, are too apparently productive of the rickets, to need any comment.

Fifth, A bad regimen of diet. The common food of children in these times, especially that of the poorer sort, almost entirely consists of relaxing, watery stews, and viscid acescent vegetable substances: as poor milk, milk and water, tea, sugar, bread pudding, pastry, fruits, &c. Acescent vegetable juices, and sweet things, being saponaceous, tend to melt down, and depauperate the blood. This common food of children, we see then, has a direct natural tendency to relax, and let down the spring of the system of vessels,
and

and to fill them with an acid colluvies ferofa.

The pathognomonic symptom, or most essential and distinguishing sign of the rickets, is soft, flexible, and crooked bones: now the bones of children, and even adults, by being soaked in small acid liquors, acquire the same disposition with those of rickety children, become soft, spongy, and flexible. A very small and almost imperceptible degree of acidity, if a longer time be allowed for the maceration, is sufficient to produce this effect. The analogy here is strong, and certainly affords a very solid argument in favour of the point, which I am endeavouring to establish.

This then is a short sketch of the nature and causes of the rickets, from which, I presume, we may infer the truth of our position, and with great probability conclude, that this disease consists in a dissolute depauperated state of the fluids, tainted with an acid acrimony, and a general relaxation and debility of the solids.

This theory of an acid acrimony being one of the causes of the rickets, receives great confirmation from the ingenious Mr. Margraaf's chymical discoveries. This excellent chymist has clearly demonstrated the real existence of an *acid, even in the*
most

most solid parts of the human body, which à fortiori must have previously existed in the fluids, whence the solids are formed, and nourished. And lastly, the cure of this distemper, as a concluding argument, greatly corroborates what has been advanced. Vide Memoires de l'Acad. Royal de Berlin.

First, This is to be effected by such means, as are adapted to evacuate the colluvies serosa, or surcharge of dissolute ferous humours.

Second, To brace up and invigorate the weak enervated solids.

Third, To restore the sharp depauperated fluids their due crasis, and balsamic nutritive virtue.

The regimen and medicines proper to answer these indications are, first, warm dry country air,

Second, Constant brisk exercise and frictions.

Third, A nourishing restorative diet, which should turn pretty much upon alkalescent animal substances, excluding sweets, sour, diluents, and very sparingly admitting of acescent, saponaceous, and resolvent materials; amongst which fruits stand foremost.

Fourth, Stomachic bitters, among which the cortex peruv. seems to challenge the first place; the seven mild corroborating aromatics,

matics, as cinnamon, nutmegs, &c. and the milder alkalies, and absorbents; and lastly, the cold bath.

Now this whole process of the cure has a manifest tendency directly or virtually to correct, and extirpate acidity; and if our Doctor, for want of other employment, or still pursued by the same ill fate that has hitherto in this dispute attended him as a writer, should take it in his head still to controvert this idea of the rickets, we may readily guess from the specimen he has already given us of his abilities as an assayer and a critic, what figure he will make as a physician.

*Nec iste hercle magno cum
Conatu magnas nugas dixerit.*

It is highly probable that this disease, (the rickets) proceeds from a *redundant acidity, because vinegar will soften, and crook tender bones:* and this symptom must happen in children, when there is no strength in the muscles to support them, or they must be inflected to that side where the muscle will pull strongest. *Arbutnot on Aliment, 2d Edition.*

“ It avails nothing to prove that girls
“ have lost their health by drinking vine-
“ gar, unless it can be proved that it
G “ has

“ has brought on this particular disease.”

Page 15.

A. It can be proved that it has brought on the colic, and paralytic lameness of the hands, said to be the pathognomonic symptom of this disorder.

“ Doctor Nooth assures me, that in
“ Dorsetshire, particularly on this side
“ near to Somersetshire, the cider presses
“ are very frequently lined with lead, and
“ that the colic of Poitou is most frequent in those parishes where they use
“ the most lead. He knows a gentleman,
“ who makes a great deal of cider, but
“ who uses no lead in his utensils; the
“ colic of Poitou is never in that
“ gentleman’s family, although his servants drink large quantities of cider.”

Page 16.

A. Mr. Cockey’s authority, and that of Mr. Worth’s, is diametrically opposite to this.

“ A French writer is quoted by you to
“ shew, that Rhenish and Moselle wines
“ occasion the colic, by means of an adulteration. The passage referred to in your
“ Essay, is as follows: *Ces vins pechent souvent par trop de verdeur, et les merchants les ont long tems alteré avec la litarge.*
“ But Mr. Geach attempts to prove, from
“ the

“ the authority of this very passage, that
 “ Rhenish and Moselle wines produce
 “ the colic by means of their acidity. In
 “ order to do this, he only quotes the first
 “ part of the sentence. *Les vins pechent*
 “ *souvent par trop de verdure.* These
 “ words he construes thus. These wines
 “ often hurt by their too great acidity, and
 “ he entirely drops the subsequent part,
 “ which puts the author’s meaning out
 “ of all possibility of doubt.” Page 16.

A. As to this French passage which we have so grossly, ignorantly, nay, wickedly misrepresented, I must beg leave to observe, that Mr. Bouvart has these words: “ *Les*
 “ *matins minerales venimeuse et les vins*
 “ *verts et austeres, quoique differents en*
 “ *apparence produissent les coliques a peu*
 “ *pres de meme espece;*” which were thus translated. Poisonous mineral substances, and sharp austere wines, though different in their natures, bring on colics almost of the same species; and the passage referred to in the Essay, is at large thus. “ *Ce qu’il y*
 “ *a de certain c’est la colique dont il est a*
 “ *question a ete epidemique dans les payes ou*
 “ *l’on boit des vins de Rhin et de Moselle, ces*
 “ *vins pechent souvent par trop de verneur,*
 “ *et les merchands les ont long tems alteré*
 “ *avec la litarge.*” Now is not the translation,

tion, particularly of the verb *pechent*,
 “ these wines often hurt by their too great
 “ acidity, natural and proper, carrying
 “ the same meaning, and confirming the
 “ sense of the other passage? which sense
 “ would have been further confirmed,
 “ had Doctor Saunders consulted Piso,
 “ and read the passage referred to.”

But Piso, perhaps, may be considered
 as a kind of *ancient*, and consequently a
blind guide, and not worth following: or
 had not Doctor Saunders passed by the
 first quotation, and overlooked the second
 from Mr. Bouvart, and also uncandidly
 suppressed the following sentence from
 our pamphlet, “ though greater mischief
 “ may be done by the adulteration;”
 which giving the sense of *les marchands les*
ont long tems alteré, acknowledges, that the
 merchants did adulterate them, our mean-
 ing also would have been put out of all
 doubt and reach of cavil.

Sed cuius rigidi facilis censura cachinni.

Let us now exhibit Doctor Saunders's
 own explanation of this controverted
 French passage. “ These wines are *faulty*,
 “ by means of their acidity.” In your
 next pamphlet you will oblige me, by
 explaining how these wines can be said to
 be

be faulty, if they do no hurt. Indeed, Doctor, since you have recommended the consulting of Chambers's Dictionary, I must desire you, as being a French translator (I do not say a word-catcher) to consult a French one yourself; after which, be pleased to reconcile your word *faulty* with the passages above quoted.

Here it may be worth observing, that in the Doctor's last work, this French paragraph is omitted.

" You have not asserted that the farmers
" of Devon use litharge." *Page 18.*

A. Very true; but Monsieur Bouvart does in the following words; " il est
" possible que le vins dont parle citois et
" les cidres dont parle Monsieur Huxham,
" aient ete sans qu'il est aient pu decouvrir
" alterés avec la litarge." Which opinion the learned author of the Enquiry espouses; acknowledging that the hint was taken in part from him.

Although Doctor Saunders denies that Doctor B. hath charged the farmers of Devon with using litharge, yet Doctor Saunders himself very plainly insinuates, they use that, or something as bad, in their cider. *Page 18.*

" Every pupil in chymistry knows,
" that the acid in cider, is the only part
" capable

“capable of dissolving this poisonous metal.” Page 19.

A. And every farmer, nay every farmer's child, knows, that cider, when it flows from the pounds, at which time it is supposed to dissolve this poisonous metal, is not *acid*, but *sweet*.

“The longer the cider stands,” *if properly kept*, (which words, Doctor, by your leave, are rather equivocal) “it becomes more mellow; that is, it deposits its tartarous acid, and the poison will consequently be precipitated along with it.” Page 19.

A. Doctor Saunders, conscious that this project concerning our Devonshire cider was likely to do much mischief, has at last broke his crucible, and discovered the secret; or, in other words, has told us (if his meaning can be ascertained) that Devonshire cider, *after it has been properly kept*, that is, after some time, that is, when it is usually drank, is a more wholesome liquor, and allowed by the Doctor himself not to be poisonous at all.

“It is not probable, that a gentleman should have enquired into the state of his pounds, or the state of the disease, in the various parts of a large county, with sufficient accuracy to enable him to give

“ give an evidence on this subject, which
“ can in any degree be decisive.” *Page 19.*

A. Ought not the assertion of a gentleman, who resides in the heart of a cider county, who is well acquainted with the construction of the cider machines, and no stranger to the diseases which afflict his neighbours and tenants, be in a greater degree decisive, than the hearsay evidence on which, I presume, the hypothesis was first founded? It has been only since the doctrine was controverted, that the pounds have been so microscopically examined. But it were a pity that a doctrine so new should fall to the ground for want of props to support it.

“ All the apples are compressed in
“ wooden pounds, or ground in iron or
“ wooden mills. If all the apples were
“ thus compressed and ground, it is to
“ be presumed, that the Moorstone
“ troughs are never employed.” *Page 20.*

A. All the apples in some parts of Devonshire, particularly near Hatherleigh, are compressed in wooden engines; in other places Moorstone troughs are employed, in the construction of which there is no lead of consequence. There is no mistake in the fact, the error is only in the expression, which cannot blemish the fact.

Facile

Facile est verbum aliquod ardens notare idque irrideri.

“ Doctor Wall says, he has had lately
 “ two or three patients in that distemper,
 “ occasioned by their having drank cider
 “ made in a press covered over with
 “ lead.” *Page 21.*

A. If Doctor Wall had two or three patients in the colic from one press being covered with lead, what has that to do with the endemial colic of Devon? Unless it can be proved that all the presses in that extensive county (perhaps many thousands) were covered with the same metal; will thirty, or forty presses in three parishes (a circumstance, perhaps, not to be paralleled throughout the province) be sufficient to cause an universal disorder? You have not told us how many presses in the same, or other parishes, were *not* covered with lead. It was customary, at the shrine of Neptune, to suspend a votive tablet, which gave an account of all those who had escaped shipwreck; but had an account also been registered of all those who had been drowned, the number that escaped would have been very inconsiderable.

“ The agitation of the must, during its
 “ running off, will necessarily facilitate,
 “ and promote the solution of the lead.”
Page 21.

A. There

A. There is no agitation of the must in its running off. The must runs down quietly, as a liquor out of a cask, or water from a fountain.

“ In fact, physicians find that the colic
 “ of Poitou is not an uncommon disorder
 “ in London, and it is more than pro-
 “ bable that the Devonshire cider, (mark
 “ reader the insinuation) whether unmixed
 “ with other liquors, or as it enters a
 “ composition which is drank for wine,
 “ may contribute towards making this
 “ disease so common as it is.” *Page 24.*

A. Poor Devonshire cider then gives the colic of Poitou, not only as a simple, but compound. The wicked vintners mix our cider with their wine, and thereby propagate the distemper to the metropolis. I wonder what proportion of Devonshire cider is used in a pipe of wine. This doctor finds it difficult to get lead enough in the cider to produce the colic, when used *per se*, how then will he find enough to produce the disease when the cider is mixed with wine, and that only in a fourth, sixth, or perhaps an eighth, or less proportion? For my part, I believe the cider to be the best, and most innocent additional ingredient in brewing wine. Surely Doctor Saunders

H

must

must be hard pressed, or he would not have recourse to such a trifling argument.

“ It must be observed, that part of
“ Mr. Moore’s first letter is suppressed.”

Page 25.

A. Mr. Moore sent his letters to Doctor Huxham, in order to remove the unfavourable impression which Doctor B.’s pamphlet might occasion. I wrote to Mr. Moore, desiring copies of those letters; upon which Doctor Huxham had leave to make what use of them he pleased. And the Doctor therefore permitted me to extract such parts, as had immediate relation to the experiments. This was done without any violence to Mr. Moore’s meaning, and without any fallacious intent to deceive the world. The copies thus transcribed, were published as *extracts* of letters, not letters. The paragraph omitted appeared then, and appears still, of no consequence. But the truth of the matter is, Doctor, you are angry; not because the *whole* of Mr. Moore’s letters was not published, but that *any part* of them should be brought to light; and that the fifth experiment, which was deemed a capital one, and on which the whole of this important doctrine was made to rest, should by those very letters be at once as it were

were annihilated, or rendered good for nothing.

Before I take my leave, either of you or the subject, permit me to offer a little friendly advice; though, from the manner in which you have conducted yourself in this controversy, some think you have no right to expect even an answer.

First, never undertake the defence of another man's hypothesis, which like this is so weakly supported, either by reason or experience. People remote from Devon, and strangers to our cider-making business, may be struck with its novelty, more especially as it comes from an author of such character: and the prejudice with such people, may be both great and lasting; as they have but little time, and less inclination, thoroughly to examine the matter. Should the same learned author go on, and assert that one grain of lead in three thousand gallons of cider, instead of one gallon, is sufficient to cause the endemial colic, I make no doubt, but the doctrine would find (though not in our county) a defender, one who would be ready to cry out, How do you know? Can you *prove by experiments* it is not sufficient? Who can ascertain the utmost force of such a poison as lead, which is so remarkably injurious to the human body? This is the

only strength of the hypothesis, which poorly consists in being thus intrenched as it were in obscurity.

In the next place, never expect to advance either your medical or chemical character, by an affectation of wit and pleasantry. Levity ill becomes a physician, who ought to be a sober enquirer after truth. Mirth, which may set a few jovial club companions in a roar, will be hardly understood, and not at all relished by the plain and honest farmers of Devon; who (if this doctrine be credited) must never expect to pay their rents from the produce of their orchards. Never think, by lessening the merit of those, whose writings are founded, not on the slippery basis of fancy, but on long experience, that you can add any thing praiseworthy to yourself.

Qui simulatione et inani ostentatione et ficto non modo sermone, sed etiam vultu stabilem se gloriam consequi posse rentur, vehementer errant. Vera gloria radices agit atque etiam propagatur. Ficta omnia, celeriter, tanquam flosculi, decidunt, nec simulatum potest quidquam esse diuturnum.

CICERO.

